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10/645,481

08/22/2003

Koichi Shimizu

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08/11/2006

STAAS & HALSEY LLP

SUITE 700

1201 NEW YORK AVENUE, N.W.

WASHINGTON, DC 20005

EXAMINER

PATEL, SHAMBHAVI K

ART UNIT

PAPER NUMBER

2128

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/645,481 | Applicant(s) SHIMIZU, KOICHI | |
| | Examiner Shambhavi Patel | Art Unit 2128 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/29/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-30 are pending.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 29 October 2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner has considered the IDS as to the merits.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9-24, 26-27, and 29-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The Examiner asserts that the current state of the claim language is such that a reasonable interpretation of the claims would not result in any useful, concrete or tangible product. Merely generating analytical data does not produce a tangible result.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claim 1-3, 5, 7-11, 13, 15-19, 21, and 23-30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Muuss ('Combinatorial Solid Geometry, Boundary Representations, and Non-Manifold Geometry').**

Regarding claims 1, 9, and 17:

Muuss is directed to performing an analysis using geometric data to check characteristics of a structure represented by the geometric data, comprising a specifying unit specifying one or more types of analyses from among plural types of analyses, an obtaining unit obtaining necessary conditions from among necessary analytical conditions of the plurality of analyses based on the specified types of analyses, and a generating unit generating analytical data formed by at least the obtained analytical conditions and the geometric data corresponding to the specified types of analyses (**'A History of Solid Modeling' pages 2-3, figure 1; 'Interrogating a Solid Model' pages 6-7**). The prior art discloses performing solid geometric modeling so that a plurality of analyses may be performed on the model, such as structural analysis, and thermal analysis (**page 2**). This geometry model and material properties (*analogous to the analytical conditions*) are passed to analysis software that interrogates the model to obtain the necessary information. The results of the analysis (*analogous to the analytical data*) are then output to the user (**figures 1 and 2**).

Regarding claims 2-3, 10-11, and 18-19:

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Muuss discloses sending the geometric model and material properties (*analogous to analytical conditions*) to the analysis software. The software then extracts the properties needed, and combines them with the model to perform the analysis (**‘Interrogating a Solid Model’** pages 6-7; **figures 1 and 2**; **‘Thermal Predictions’** page 64).

Regarding claims 5, 13, and 21:

Muuss discloses having analytical conditions include a contact setting of a part boundary (**‘Non-Manifold Geometry’** page 21).

Regarding claims 7, 15, and 23:

Muuss discloses having analytical conditions that include settings of a shell representation of parts geometric data and of part weights (**‘Separation of Topology and Geometry’** pages 21-22).

Regarding claims 8, 16, and 24:

Muuss discloses having analytical conditions that include a wavelength of an electromagnetic field in an electromagnetic analysis (**‘Radar Predictions’** page 65).

Regarding claims 25-27:

Muuss discloses generating analytical data formed by the specified types of analysis (**figure 2**).

Regarding claims 28-30:

Muuss discloses obtaining a property value that is a necessary analytical condition in the specified analysis from a material database (**‘Thermal Predictions’** page 64). When performing

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analysis on a model, the analysis software may extract the necessary parameters from the material properties that accompany the solid geometric model.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. **Claim(s) 4, 6, 12, 14, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muuss ('Combinatorial Solid Geometry, Boundary Representations, and Non-Manifold Geometry')**

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in view of Tsap ('Efficient Nonlinear Finite Element Modeling of Nonrigid Objects via Optimization of Mesh Models').

Regarding claims 4, 6, 12, 14, 20, and 22:

Muuss does not explicitly disclose adjusting the mesh size to an optimum or specific value. Tsap teaches finite element analysis using CAD by first forming a mesh. Tsap teaches employing mesh controls (i.e. *trying to minimize the mesh size to an optimum value*) by performing local mesh refinement (Tsap: section 3.6 'Mish Control Strategies'). At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Muuss and Tsap because by controlling the size of the mesh, better results are obtained because the mesh is more accurate (Tsap: section 3.6 'Mish Control Strategies').

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is (571) 272-5877. The examiner can normally be reached on Monday-Friday, 8:00 am – 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKP


KAMINI SHAH
SUPERVISORY PATENT EXAMINER